



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,648	09/25/2003	Prasad Golla	Q77710	7770
23373 7590 08/19/2008				
SUGHRUE MION, PLLC				
2100 PENNSYLVANIA AVENUE, N.W.				
SUITE 800				
WASHINGTON, DC 20037				
EXAMINER				
WONG, XAVIER S				
ART UNIT		PAPER NUMBER		
2616				
MAIL DATE		DELIVERY MODE		
08/19/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/669,648

Applicant(s)

GOLLA ET AL.

Examiner

Xavier Wong

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28th July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claims **1-15** are pending with claims **10-15** being new

This is a Non-Final action

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 28th July 2008 has been entered.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 recites the limitation "the transmission" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1, 2, 4, 8, 9, 10 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallmeier (US 6553033 B1) in view of Fabiny et al (US 6747799 B2, "Fabiny").

Claim 1: Wallmeier shows a scheduler device for scheduling transmission of data from a plurality of queues in a source node to a plurality of destination nodes (e.g. LICs or to other SMUs through intermediate switch **see diagram 1 below) via a plurality of outlet ports of the source node (figs. 1 & 2), the scheduler device comprising:

a plurality of servers (e.g. SMUs), each being associated with a respective one of a plurality of resources (fig. 1: the "tunnel" between the SMUs and an intermediate "switch") and each comprising a scheduler module (e.g. WFQ scheduler; col. 4 lines 9-13) which is independent for each of the servers (col. 3 lines 46-51),

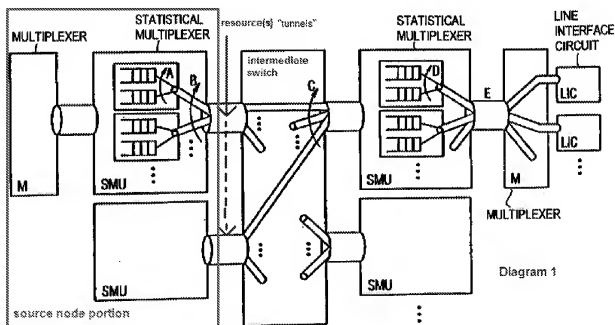
wherein each of said outlet ports is associated with a respective one of the plurality of resources (**see diagram 1 below).

However, Wallmeier may not have *expressively* shown the data is transmitted from a source node to a destination node via an outlet port and a *corresponding resource*, wherein at least one of the plurality of resources is used for transmitting data to more than one of the plurality of destination nodes, and wherein at least one of the plurality of resources is used for transmitting data to *subset of the plurality of destination nodes*.

Fabiny shows a structure within a wavelength router (figs. 5A-5C) wherein transmitting of a plurality of spectral bands (e.g. resources) from a source (512) to a destination node via an outlet port (e.g. fig. 5B: outlet ports 530 or 515(1...M)) and a corresponding resource (fig. 5B wherein different spectral bands go to different outlet ports listed above), wherein at least one of the plurality of resources is used for transmitting data to more than one of the plurality of destination nodes (col. 8 lines 22), and wherein

at least one of the plurality of resources is used for transmitting data to subset of plurality of destination nodes (col. 8 lines 23-28).

It would have been obvious to one of ordinary skill in the art at the time the invention was created to modify and upgrade the resource ("tunnel") of Wallmeier into the multiple spectral band resources wherein each resource may direct data to a plural of destination outlets as taught by Fabiny so that data having different spectral bands may be routed to different outputs while achieving high diffraction efficiency in all polarization directions (col. 1 lines 57-59).



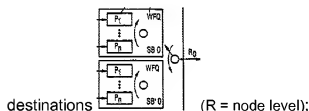
Claims 2 and 15, applied to claims 1 and 2: Wallmeier, modified by Fabiny, further shows in figure 2 that the scheduler module comprises a plurality of stages

corresponding respectively to a plurality of scheduling schemes using different criteria (col. 3 lines 31-35 & 46-52); wherein the criteria is:

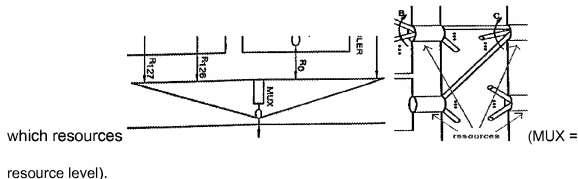
flow level scheduler scheduling between competing flows heading for the same



node level scheduling which arbitrates between loads corresponding to different



a resource level scheduler which take account of which nodes are connected to



Claim 4, applied to claim 1: Wallmeier, modified by Fabiny, further shows that the scheduling module comprises a weighted fair queuing scheduling module (col. 3 lines 29-33).

Claim 8, applied to claim 1: Wallmeier, modified by Fabiny, further shows in figure 1 (and diagram 1) that a node comprising a scheduler device comprising a plurality

of queues (in the SMUs) for sending data to a plurality of destination nodes (LICs), and a plurality of outlet ports (e.g. "tunnels").

Claim 9, applied to claim 1: Wallmeier, modified by Fabiny, further shows the system comprising at least one source node (**see diagram 1 above: the examiner considers the boxed portion as the source node).

Claim 10, applied to claim 1: Wallmeier, modified by Fabiny, further shows each scheduler schedules data transmission on an outlet port associated with a resource that is shared with a destination node of the data (col. 3 lines 46-51; fig. 2: $R_{0...127} \rightarrow \text{MUX}$).

Claim 12, applied to claim 1: Wallmeier, modified by Fabiny, further shows each scheduler module is independent such that each scheduler (SB) module takes into account specific features of a respective resource with which respective server (SMU) of the scheduler is associated (fig. 2; col. 4 lines 40-54).

Claim 13, applied to claim 1: Fabiny further mentions the plurality of resources correspond to a transmission capacity (col. 1 lines 14-20).

Claim 14, applied to claim 13: Fabiny further discloses the plurality of resources correspond to a plurality of wavelengths on an optical transmission line (col. 1 lines 14-20; col. 7 line 65 – col. 8 line 5).

Claim 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallmeier (US 6553033 B1) in view of Fabiny et al (US 6747799 B2, "Fabiny"), applied to claim 1, and in further view of Fan et al (US 6408005, "Fan").

Consider claim 3, and as applied to claim 1: Wallmeier, as modified by Fabiny, disclose the claimed invention except a cyclical round-robin scheduling means. In the same field of endeavor, Fan teaches queues are visited in a cyclic order in a round-robin scheduling scheme (col. 1 lines 37-39). It would have been obvious for a person of ordinary skills in the art at the time when the invention was made to modify the scheduling mode of Wallmeier, as modified by Fabiny, to a cyclical round-robin scheduling mode as taught by Fan, in order to avoid processes from being denied of necessary resources.

Consider claim 5, and as applied to claim 1: Wallmeier, as modified by Fabiny, disclose the claimed invention except *specifically* mentioning the scheduling means are dependent on a set of static and/or dynamic weights. Fan teaches static and/or dynamic scheduling methods dependent on weights (col. 8 lines 63-67, col. 9 lines 1-9). It would have been obvious for a person of ordinary skills in the art at the time when the invention was made to modify the scheduling device of Wallmeier, as modified by Fabiny, to the scheduling means that are dependent on a set of static and/or dynamic weights as taught by Fan in order to allow flexible distribution of bandwidth.

Claim 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallmeier (US 6553033 B1) in view of Fabiny et al (US 6747799 B2, "Fabiny"), applied to claims 1 and 6, and in further view of Biroux et al (*Quality of Service in ATM Networks: State-of-the-Art Traffic Management*, "Biroux").

Consider claims 6 and 7, and as applied to claims 1 and 6: Wallmeier, as modified by Fabiny, disclose the claimed invention except specifically showing the first and second sets of weights, in which each weight represent a relative weight of the traffic of each node; and as a percentage of resource allocated to each node – relative of the total traffic of the plurality of nodes. Biroux discloses the concept of the weighted round-robin method that calculates relative allocation (ratio) using each connection's weight (w_i), the link capacity of the system, as well as the total (all) weights $\sum W_i$ where i can be from 1 to the total (N) number of cell slots (as resources/traffic of nodes) available (pg. 100 lines 22-33, pg. 105 lines 1-14). It would have been obvious to a person of ordinary skills in the art at the time the invention was created to modify the scheduling weighing factors of Wallmeier, as modified by Fabiny, into being dependent each weight represent a relative weight of the traffic of each node; and as a percentage of resource allocated to each node – relative of the total traffic of the plurality of nodes as taught by Biroux, in order to assign resources to each connection fairly.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wallmeier (US 6553033 B1) in view of Fabiny et al (US 6747799 B2, "Fabiny"), applied to claim 1, and in further view of Bisson et al (US 2003/0059159 A1, "Bisson").

Claim 11, applied to claim 1: Wallmeier, modified by Fabiny, disclose the claimed invention yet may not have very specifically mentioned the source node as a concentrator of a dual bus optical ring network and wherein the plurality of destination nodes are Optical Packet Add/Drop MUXes. Bisson shows in figure 1 a hub

(concentrator) is as an access point to a network wherein traffic on a group of wavelengths is addressed to stations (destinations) on the ring in which each station is an optical add/drop multiplexer (OADM) station ([0016] lines 13-18). It would have been obvious to one of ordinary skill in the art at the time the invention was created to implement the scheduling functions of Wallmeier, modified by Fabiny, to be used in the concentrator and OADMs of Bisson to allow efficient drop of portion of the traffic that is addressed to one or more of the wavelengths from the group and to add its own traffic addressed to the hub, while at the same time allowing all the wavelengths sent and received by the hub to circulate freely.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
4. Nishio et al (US 5907551): distribution networks for varying traffic patterns
5. Beshai (US 2003/0193955 A1): scheduling in fast optical switch
6. Lauder et al (US 2002/0105692 A1): DWDM terminals and placed in an optical ring communicating with a reconfigurable OADM
7. Okabe et al (US 6031838): switching system comprising mux/demux units including a line concentrator for concentrating cell stream outputs by each plurality of line interfaces and a line deconcentrator for deconcentrating cell streams
8. Kozaki et al (US 2001/0043597 A1): ATM cell switching system (see fig. 6)

9. Magill et al (US 2004/0081184 A1): individual schedulers for each set of input queue flows
10. Motoki (US 6839354 B1): scheduling circuit for different class of services and priorities

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xavier Wong whose telephone number is 571-270-1780. The examiner can normally be reached on Monday through Friday 8:30 am - 6:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Brenda Pham/

Primary Examiner, Art Unit 2616